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Mrs. Laura Ward, Executive Director
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Subject: **Independent Review of 2023 Remedial Action Summary Report**
Lockheed Martin Tallevast Site (Former American Beryllium Company Site)
1600 Tallevast Road
Tallevast, Manatee County, Florida
Project Number PRJ108482

Dear Mrs. Ward and Mrs. Washington:

RES Florida Consulting, LLC dba E Sciences (RES) is pleased to submit this letter outlining the findings and our opinions resulting from review of the Remedial Action Status Report (RASR) dated October 27, 2023 for the Lockheed Martin Tallevast (former American Beryllium Company) site ("the Facility"). The Site consists of both the Facility and the surrounding area where groundwater is impacted by the chemicals of concern.

INTRODUCTION

RES' understanding of the project is based on litigation support that we provided to FOCUS as part of an administrative challenge on the Site Assessment Report (SAR) and Remedial Action Plan (RAP) and Addenda that were prepared regarding the contamination caused by the former operation of the Facility. The RAP and supporting RAP Addenda (RAPA) were approved by Florida Department of Environmental Protection (FDEP) and since that time, Lockheed Martin has proceeded with remediation implementation. At the conclusion of the administrative challenge, the judge suggested that once the remediation system operated for a period of five years, it would be a good time for FDEP and FOCUS to evaluate the system performance and address potential issues at that time. FOCUS members reviewed the October 29, 2019 RASR, which contained the updated five year groundwater model and noted that Lockheed Martin stated that the groundwater recovery and treatment system was meeting or advancing the remedial action objectives, except for the hydraulic control along the southeastern capture zone boundary in the Upper Surficial Aquifer System (USAS). However, FOCUS observed that the plume maps showed substantial contamination migration beyond what had been predicted by Lockheed Martin.

These concerns prompted FOCUS to request that we review the previous RASRs that had been prepared to at that time to assist the community in understanding the technical issues and deficiencies that were contained within the report and evaluate how those issues may be affecting the community. Since that time, we have provided on-going support to FOCUS to compile information and opinions regarding the ongoing remediation progress and regulatory reporting.

Recently, Lockheed Martin issued a Remedial Action Summary Report (RASR) dated October 27, 2023, that summarizes the remedial activities conducted from September 1, 2022, through August 31, 2023. This report documented the ordinary remedial actions during the reporting period but included some additional items requested by FDEP based on FOCUS' request.

Lockheed Martin did not conduct all of the activities requested by FDEP. We very much appreciate FDEP's support on these issues. However, we do have some additional concerns yet to be addressed which are presented herein.

RESULTS OF FOCUS' 2023 RASR REVIEW

Lockheed Martin failed to conduct Direct Push Technology testing required by FDEP**-** Despite repeated requests from the community and FDEP, Lockheed Martin refuses to assess potential shallow groundwater impacts in the residential neighborhood located immediately south and east of the source property in the apparent downgradient direction of the shallow plume movement. It is important to note that there is no water supply well moratorium for this area nor any other deed restrictions preventing people from contacting the shallow water table in the USAS. Additionally, undetected contamination in the shallow groundwater could be a source of vapor encroachment into homes and cause community exposure to volatile contaminants of concern.

In response to Lockheed Martin's 2022 RASR, FDEP requested that they conduct direct push technology (DPT) testing in the area downgradient of the facility to assess the USAS. Lockheed Martin responded stating that in their opinion the DPT investigation was not warranted because the area is within the capture zone of the existing groundwater remediation system. FDEP replied that they maintain that the DPT investigation is needed and should be conducted because it is important for the owners of the private residences to know the groundwater contaminant levels beneath their properties. Lockheed Martin apparently met with FDEP in September 2023 asserting their opinion that assessment is not warranted because they conducted some Vibra-Push assessment in 2004 and installed a large amount of monitoring wells (in 2005 and 2006) to "establish the horizontal and vertical boundaries" within each impacted stratigraphic unit of the 200-acre plume. Lockheed Martin further state that FDEP approved a SARA III document on September 25, 2006 which "concluded the site assessment task". When FOCUS raised concerns about the adequacy of the assessment at the time that FDEP approved SARA III, FDEP's general counsel, Larry Morgan, issued a letter to FOCUS, dated November 23, 2006, stating "The Department's decision to accept the SARA III does not preclude additional testing, research, or other activities, which may be required of Lockheed Martin in order to develop and implement an appropriate RAP. Additional testing and other activities to further develop and implement an appropriate RAP are expected." The letter further states "By this letter, the Department is representing to you and your clients that a decision not to pursue a Petition for Formal Hearing on the approval of the SARA III will not in any way preclude you or your clients from raising any concerns or disputes about the adequacy of the SARA III in response to a Department approval of a RAP submitted by Lockheed Martin." FOCUS agreed not to challenge the adequacy of the SARA III at that time based on this understanding that Lockheed Martin would be conducting additional assessment and that the SARA III approval was issued only as sufficient to begin development of the RAP. This concept from the FDEP was accepted by FOCUS and with this understanding FOCUS did not challenge the approval of SARA III based on the FDEP's encouragement that the concerns about assessment deficiencies would be addressed prior to RAP approval. This assessment has yet to happen and this communication further demonstrates that historic assessment and site assessment approval does not justify avoiding additional assessment when it is warranted.

Further the information provided to FDEP as justification for not conducting assessment in the residential area is highly insufficient. The figures Lockheed Martin provided as evidence of adequate assessment show the two USAS monitoring wells in the residential area are screened below 38 feet and 20 feet. Moreover, the limited wells in this area that have this screened profile indicate the shallowest test from the 20 foot depth showed high concentrations of PCE and TCE, but there is no shallower data. Further, 1-4-dioxane was not assessed at all. Lockheed Martin is not presenting data that is representative of the shallow groundwater beneath the residences. Moreover, even if that had been sufficient then, the data was collected for a different purpose nearly 20 years ago and in an area where substantial groundwater contamination movement has been ongoing since RAP implementation. This information is not adequate for the owners or private residents to know what levels of groundwater contamination are beneath their properties. Lockheed Martin needs to comply with their consent order which requires them to implement FDEP's directives including those in FDEP's 2022 RASR Review

Additionally, in a February 4, 2021 FDEP memorandum, FDEP commented that there are several hot spots where contaminant concentrations remain quite a bit above the cleanup goals. Undetected hot spots in the shallow groundwater could also be a

source of vapor encroachment into homes and cause community exposure to volatile contaminants of concern. **We recommend that direct push testing be conducted on residential properties located south of Tallevast Road between the railroad tracks and the golf course on a minimum 100-foot grid spacing, with at least one test location per private property. FOCUS would be willing to assist Lockheed Martin with obtaining site access agreements with the individual homeowners to facilitate this necessary assessment. Further, all groundwater samples in this area should include samples collected from the top of the water table and tested for all COCs to assist in evaluating potential for contamination exposure through direct contact with the water table or via vapor encroachment impacts to the residents of the community. Without knowing the concentrations of contaminants in the shallow groundwater or vapor, the risks of exposure continue to be unassessed.**

Data from extraction wells continues to be used to represent static groundwater conditions. Dynamic samples continue to be used to collect samples from extraction wells, which is appropriate to evaluate influent concentrations but not to make decisions about water quality in that location neither for assessment purposes nor to determine if the extraction well should be removed from service or EWPARM. Lockheed Martin recommends removal of EW-2006 from the remediation system and adding EW-2015, EW-2102 and EW-5002 and associated monitoring wells to EWPARM to evaluate if those extraction wells should be taken out of service. **We recommend that a minimum of four quarterly sampling events in which the extraction well and associated monitoring wells are sampled for site COCs using quiescent sampling methods and both the extraction well and associated monitoring wells are below GCTLs for the last two consecutive quarterly sampling events, consistent with the RAP. This should be done to demonstrate that undiluted (static groundwater) samples meet GCTLs consistent with industry standards. Additionally, this does not negate the need for more data points through monitoring wells or direct push.**

Lower Shallow Aquifer System (LSAS) Plume and Capture Zone are still not defined, and the AF Gravels is not property assessed- Lockheed Martin drew downgradient LSAS plume lines based on data collected from monitoring wells MW-268 and MW-168 but those wells are essentially 1,700 feet apart, leaving the downgradient area in between them unassessed. We recommend that at least one LSAS monitoring well be installed between those two monitoring wells to confirm the plume boundaries. This is essential because the capture zone is only "inferred" with a dashed line in this downgradient direction but there are no monitoring wells to provide groundwater elevations to confirm this to be the case.

The locations where the highest concentrations of 1,4-dioxane, TCE and 1,1-dichloroethene (1,1-DCE) are in the golf course and on the private property to the south. The highest concentrations are measured from dynamic samples collected from extraction wells, which as outlined above should not be used to define plumes as they are not representative of static groundwater conditions. There are also no deeper wells in this area to define the vertical extent of impacts beneath this most contaminated area**. We recommend AF Gravel wells be installed in the golf course to delineate the vertical extent of contamination in the area of the highest contaminant concentrations in the LSAS.**

Extraction wells are being used to delineate plume and capture zones. The concern about the definition of the LSAS plume and capture zones is concerning because Lockheed Martin has used data from extraction wells EW-3019 and EW-3020 to delineate the western edge of the plume. It was discussed earlier how these dynamic samples should not be used in lieu of static monitoring points. The plume is estimated to be about 150 feet from the capture zone. This is even more egregious because there is no groundwater elevation monitoring data to substantiate the placement of the capture zone. **We recommend that Lockheed Martin install LSAS monitoring wells to the west of MW-98, EW 3019 and EW-3020 to delineate both the plume and the capture zone in this area.**

Reference wetland monitoring was terminated prior to substantial system adjustments and regulatory authorization. The 2023 RASR includes an August 2023 Wetland Monitoring Report for the period of June 2022 through June 2023. RES prepared a letter dated October 19, 2023 to express some of our concerns regarding Lockheed Martin's removal of reference wetland monitoring from the monitoring program and their removal of monitoring equipment without prior regulatory approval. While the property owner received a permit to impact the wetland and Lockheed Martin provided field notices for the work to FDEP, prior authorization was not obtained. FDEP issued correspondence in an October 17, 2022 review letter

stating that "The monitoring of TW-6 and RW-3 should continue as the hydroperiod is still showing influence due to groundwater withdrawals/pumping activities." In a SWFWMD memorandum dated January 20, 2023, they state the following: "A (RAI) Letter was sent in response to the 2022 Annual Environmental Monitoring Plan Update (linked here). The letter inquired about the permittee potentially losing access to RW-3, following the sale of the property. The permittee responded that they still do have access for monitoring, and if access is lost they will request an update to the permitted Environmental Monitoring Plan. It is important that this be done through an official permit modification request, as any requests included in an annual report will not be considered. It is recommended that if/when that occurs, alternative reference wetlands are looked into for further monitoring and comparison of TW-6." In a March 17, 2023 Memorandum FDEP indicated that they concur with the SWFMWD comments outlined in the January 20, 2023 Memo. Regardless of this clear regulatory requirement, Lockheed Martin removed RW-3 from monitoring and the telemetry monitoring station and staff gauge were removed without obtaining proper authorization or a permit modification. The monitoring well was abandoned in February well before the monitoring of TW-6 in March and May. Construction was beginning in September. There is no reason that the 2023 report should not have included regular monitoring of RW-3 as required by the plan.

Lockheed Martin states that the data collected at RW-3 during the four baseline years prior to the groundwater recovery system startup and nine years that it has been operational, is sufficient to determine if the system influences water levels observed in TW-6 without the need for a reference wetland. However, this is not true because there is no monitoring data for RW-3 since the groundwater pumping and infiltration system was substantially modified to address plume migration to the southeast. In fact, the latest large groundwater recovery system modification change occurred on January 10, 2023 and monitoring of RW-3 last occurred in December 2022. Lockheed Martin indicated in their January 12, 2023 response to SWFWMD comments, that the effects of the January 10, 2023 operational adjustment would be evaluated during the annual wetlands assessment event planned for May/June 2023 and reported in the associated annual wetland monitoring report. But the evaluation presented in the 2023 wetlands monitoring report did not include assessing the reference wetland so this was not conducted. The report only discusses TW-6, no field monitoring occurred at RW-3, and water level monitoring activities in RW-3 were terminated prior to significant system adjustments.

Considering the changes in the groundwater recovery system that have occurred without any reference wetland monitoring, it is of utmost importance to monitor a reference wetland in conjunction with the target wetland. The report also states that the plans to abandon the monitoring wells at reference wetlands RW-1 and RW-2 were thwarted due to overgrown vegetation. **We, therefore, recommend that one of these two wetlands be selected as a reference wetland, and the water level monitoring continue.**

HISTORIC CONCERNS

Several areas of concern that we raised during our review of the 2022 RASR and before still have not been addressed. Without Lockheed Martin conducting further evaluation of these areas of concern, we are unable to assess their impact to the community and Lockheed Martin is unable to determine if adjustments to the remediation system or other measures should be implemented.

- <u>The model conflicts with Lockheed Martin's finding and this information was never reconciled.</u> Concerns in the area north and west of the site became apparent during our review of the updated 2018 groundwater model because it forecasted that contamination existed outside of the northwest area of the predicted USAS capture zone. FOCUS has requested that Lockheed Martin re-run the model since 2019, but that has not occurred. Lockheed Martin indicates that the next model update will include the period from 2019 to 2023 and will be provided in the 2024 RASR. We would like to add that Lockheed Martin needs to include the five-acre stormwater pond associated with the Amazon warehouse to provide assurances that the pond will not have a detrimental impact on the contaminant plume and to substantiate claims that it is actually assisting in the groundwater plume capture. **We recommend that the updated model be provided when it is available, rather than wait another full year.**

- There is insufficient information to substantiate the capture zone boundaries. We note that in several cases, the groundwater elevations within the capture zone within the USAS are at higher elevations than those from outside the capture zone. There are numerous instances where there are no datapoints to estimate the capture zones at all, as previously discussed. The report simply indicates that capture boundaries shown on figures are estimated using data from monitoring wells, stilling wells, and piezometers, and by applying professional judgment. It is unclear how these "inferred" capture zones can be estimated without data to support them. The RASR does not provide sufficient rationale to justify why the capture zones do not match groundwater elevations. **We urge an independent expert review of the potentiometric figures and the 2019-2023 groundwater model to confirm the extent of the estimated capture zones and to evaluate if additional piezometers should be installed to substantiate the estimated capture zone configuration.**
- Lockheed Martin has eliminated monitoring nearly all of the private wells and when asked to provide justification for removal of private wells from monitoring, incorrect and confusing information was provided to FDEP. Only two private wells are being monitored at this time, PW-7 (one of the original wells in the RAP) and PW-132. Also, one of the private wells that is no longer being monitored is PW-38 which was only sampled one time and displayed a 1,4-dioxane concentration of 95 ug/L and it was never sampled again. It was abandoned without rationale and never replaced or discussed further. Lockheed Martin has yet to provide sufficient justification and reasoning for why all the private wells are not being monitored and if they were abandoned why they were not replaced with monitoring wells. If their rationale is insufficient justification, then those private wells should be monitored as was agreed.

In summary, we appreciate the FDEP asking for consideration of the community in its response to the 2022 RASR and strongly recommend that FOCUS' concerns outlined herein be taken into consideration by FDEP and Lockheed Martin and addressed.

We appreciate the opportunity to offer our professional services to you. If you have any questions concerning our evaluation, please contact us at 954-484-8500.

Sincerely,
RES Florida Consulting, LLC dba E Sciences

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